

48
OIPE

RAW SEQUENCE LISTING DATE: 10/01/2001
 PATENT APPLICATION: US/09/829,275 TIME: 15:17:24

Input Set : A:\4555105.app
 Output Set: N:\CRF3\10012001\I829275.raw

3 <110> APPLICANT: WALKER, SUZANNE
 5 <120> TITLE OF INVENTION: CRYSTALS OF THE ESCHERICHIA COLI MEMBRANE-ASSOCIATED
 6 GLYCOSYLTRANSFERASE (MURG) PROTEIN, ATOMIC COORDINATES
 7 AND THREE DIMENSIONAL STRUCTURES THEREOF, ATOMIC
 8 COORDINATES AND THREE DIMENSIONAL STRUCTURES OF
 9 BINDING DOMAINS THEREOF, IMAGES THEREOF, AND METHODS
 10 OF CRYSTALLIZING MURG PROTEINS, MODELS OF UDP-
 11 GLYCOSYLTRANSFERASES, MURG PROTEINS AND BINDING SITES,
 12 METHODS OF MAKING MODELS, METHODS OF USING MODELS OF
 13 MURG, COMPOUNDS THAT BIND, INHIBIT OR STIMULATE MURG
 14 PROTEINS, AND THERAPEUTIC COMPOSITIONS THEREOF **ENTERED**
 16 <130> FILE REFERENCE: 4555-105
 18 <140> CURRENT APPLICATION NUMBER: 09/829,275
 C--> 19 <141> CURRENT FILING DATE: 2001-09-11
 21 <160> NUMBER OF SEQ ID NOS: 8
 23 <170> SOFTWARE: PatentIn Ver. 2.1
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 364
 27 <212> TYPE: PRT
 28 <213> ORGANISM: Escherichia coli
 30 <400> SEQUENCE: 1
 31 Met Met Ser Gly Gln Gly Lys Arg Leu Met Val Met Ala Gly Gly Thr
 32 1 5 10 15
 34 Gly Gly His Val Phe Pro Gly Leu Ala Val Ala His His Leu Met Ala
 35 20 25 30
 37 Gln Gly Trp Gln Val Arg Trp Leu Gly Thr Ala Asp Arg Met Glu Ala
 38 35 40 45
 40 Asp Leu Val Pro Lys His Gly Ile Glu Ile Asp Phe Ile Arg Ile Ser
 41 50 55 60
 43 Gly Leu Arg Gly Lys Gly Ile Lys Ala Leu Ile Ala Ala Pro Leu Arg
 44 65 70 75 80
 46 Ile Phe Asn Ala Trp Arg Gln Ala Arg Ala Ile Met Lys Ala Tyr Lys
 47 85 90 95
 49 Pro Asp Val Val Leu Gly Met Gly Gly Tyr Val Ser Gly Pro Gly Gly
 50 100 105 110
 52 Leu Ala Ala Trp Ser Leu Gly Ile Pro Val Val Leu His Glu Gln Asn
 53 115 120 125
 55 Gly Ile Ala Gly Leu Thr Asn Lys Trp Leu Ala Arg Ile Ala Thr Lys
 56 130 135 140
 58 Val Met Gln Ala Glu Pro Gly Ala Phe Pro Asn Ala Glu Val Val Gly
 59 145 150 155 160
 61 Asn Pro Val Arg Thr Asp Val Leu Ala Leu Pro Leu Pro Gln Gln Arg
 62 165 170 175
 64 Leu Ala Gly Arg Glu Gly Pro Val Arg Val Leu Val Val Gly Gly Ser
 65 180 185 190
 67 Gln Gly Ala Arg Ile Leu Asn Gln Thr Met Pro Gln Val Ala Ala Lys
 68 195 200 205

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/829,275

DATE: 10/01/2001
TIME: 15:17:24

Input Set : A:\4555105.app
Output Set: N:\CRF3\10012001\I829275.raw

70 Leu Gly Asp Ser Val Ile Ile Trp His Gln Ser Gly Lys Gly Ser Gln
 71 210 215 220
 73 Gln Ser Val Glu Gln Ala Tyr Ala Glu Ala Gly Gln Pro Gln His Lys
 74 225 230 235 240
 76 Val Thr Glu Phe Ile Asp Asp Met Ala Ala Ala Tyr Ala Trp Ala Asp
 77 245 250 255
 79 Val Val Val Cys Arg Ser Gly Ala Leu Thr Val Ser Glu Ile Ala Ala
 80 260 265 270
 82 Ala Gly Leu Pro Ala Leu Phe Val Pro Phe Gln His Lys Asp Arg Gln
 83 275 280 285
 85 Gln Tyr Trp Asn Ala Leu Pro Leu Glu Lys Ala Gly Ala Ala Lys Ile
 86 290 295 300
 88 Ile Glu Gln Pro Gln Leu Ser Val Asp Ala Val Ala Asn Thr Leu Ala
 89 305 310 315 320
 91 Gly Trp Ser Arg Glu Thr Leu Leu Thr Met Ala Glu Arg Ala Arg Ala
 92 325 330 335
 94 Ala Ser Ile Pro Asp Ala Thr Glu Arg Val Ala Asn Glu Val Ser Arg
 95 340 345 350
 97 Val Ala Arg Ala Leu Glu His His His His His
 98 355 360
 101 <210> SEQ ID NO: 2
 102 <211> LENGTH: 351
 103 <212> TYPE: PRT
 104 <213> ORGANISM: Haemophilus influenzae
 106 <400> SEQUENCE: 2
 107 Met Lys Asn Lys Lys Leu Leu Val Met Ala Gly Gly Thr Gly Gly His
 108 1 5 10 15
 109 Val Phe Pro Ala Ile Ala Val Ala Gln Thr Leu Gln Lys Gln Glu Trp
 110 20 25 30
 111 Asp Ile Cys Trp Leu Gly Thr Lys Asp Arg Met Glu Ala Gln Leu Val
 112 35 40 45
 113 Pro Lys Tyr Gly Ile Pro Ile Arg Phe Ile Gln Ile Ser Gly Leu Arg
 114 50 55 60
 115 Gly Lys Gly Ile Lys Ala Leu Leu Asn Ala Pro Phe Ala Ile Phe Arg
 116 65 70 75 80
 117 Ala Val Leu Gln Ala Lys Lys Ile Ile Gln Glu Glu Lys Pro Asp Ala
 118 85 90 95
 119 Val Leu Gly Met Gly Gly Tyr Val Ser Gly Pro Ala Gly Val Ala Ala
 120 100 105 110
 121 Lys Leu Cys Gly Val Pro Ile Ile Leu His Glu Gln Asn Ala Ile Ala
 122 115 120 125
 123 Gly Leu Thr Asn Lys Leu Leu Gly Lys Ile Ala Thr Cys Val Leu Gln
 124 130 135 140
 125 Ala Phe Pro Thr Ala Phe Pro Met Ala Glu Val Val Gly Asn Pro Val
 126 145 150 155 160
 127 Arg Glu Asp Leu Phe Glu Met Pro Asn Pro Asp Ile Arg Phe Ser Asp
 128 165 170 175
 129 Arg Glu Glu Lys Leu Arg Val Leu Val Val Gly Ser Gln Gly Ala
 130 180 185 190
 131

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/829,275

DATE: 10/01/2001
TIME: 15:17:24

Input Set : A:\4555105.app
Output Set: N:\CRF3\10012001\I829275.raw

143 Arg Val Leu Asn His Thr Leu Pro Lys Val Val Ala Gln Leu Ala Asp
144 195 200 205
146 Lys Leu Glu Phe Arg His Gln Val Gly Lys Gly Ala Val Glu Glu Val
147 210 215 220
149 Ser Gln Leu Tyr Gly Glu Asn Leu Glu Gln Val Lys Ile Thr Glu Phe
150 225 230 235 240
152 Ile Asp Asn Met Ala Glu Ala Tyr Ala Trp Ala Asp Val Val Ile Cys
153 245 250 255
155 Arg Ser Gly Ala Leu Thr Val Cys Glu Ile Ala Ala Val Gly Ala Ala
156 260 265 270
158 Ala Ile Phe Val Pro Phe Gln His Lys Asp Arg Gln Gln Tyr Leu Asn
159 275 280 285
161 Ala Lys Tyr Leu Ser Asp Val Gly Ala Ala Lys Ile Ile Glu Gln Ala
162 290 295 300
164 Asp Leu Thr Pro Glu Ile Leu Val Asn Tyr Leu Lys Asn Leu Thr Arg
165 305 310 315 320
167 Glu Asn Leu Leu Gln Met Ala Leu Lys Ala Lys Thr Met Ser Met Pro
168 325 330 335
170 Asn Ala Ala Gln Arg Val Ala Glu Val Ile Lys Gln Tyr Ser Asn
171 340 345 350
174 <210> SEQ ID NO: 3
175 <211> LENGTH: 362
176 <212> TYPE: PRT
177 <213> ORGANISM: Enterococcus faecalis
179 <400> SEQUENCE: 3
180 Met Lys Ile Leu Val Thr Gly Gly Thr Gly Gly His Ile Tyr Pro
181 1 5 10 15
183 Ala Leu Ser Phe Val Glu His Val Lys Lys Glu Ala Pro Ala Thr Glu
184 20 25 30
186 Phe Leu Tyr Val Gly Thr Glu Asn Gly Leu Glu Ser Gln Ile Val Pro
187 35 40 45
189 Lys Ala Lys Ile Pro Phe Lys Thr Ile Lys Ile Gln Gly Phe Lys Arg
190 50 55 60
192 Ser Leu Ser Pro Gln Asn Phe Lys Thr Ile Tyr Leu Phe Leu Thr Ser
193 65 70 75 80
195 Ile Asn Lys Ala Lys Lys Ile Ile Arg Glu Phe Gln Pro Asp Val Val
196 85 90 95
198 Ile Gly Thr Gly Tyr Val Ser Gly Ala Val Val Tyr Ala Ala His
199 100 105 110
201 Gln Leu Lys Ile Pro Thr Ile Ile His Glu Gln Asn Ser Ile Pro Gly
202 115 120 125
204 Met Thr Asn Lys Phe Leu Ser Arg Tyr Val Asp Lys Ile Ala Ile Cys
205 130 135 140
207 Phe Pro Asp Val Ala Ser Phe Phe Pro Lys Glu Lys Thr Ile Leu Thr
208 145 150 155 160
210 Gly Asn Pro Arg Gly Gln Glu Val Val Thr Val Glu Lys Ser Ala Ile
211 165 170 175
213 Leu Ser Glu Phe Gly Leu Asp Pro Ala Lys Lys Thr Val Val Leu Phe
214 180 185 190

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/829,275

DATE: 10/01/2001

TIME: 15:17:24

Input Set : A:\4555105.app

Output Set: N:\CRF3\10012001\I829275.raw

216 Gly Gly Ser Arg Gly Ala Leu Lys Ile Asn Gln Ala Phe Glu Gln Ala
 217 195 200 205
 219 Phe Pro Leu Phe Glu Glu Arg Glu Tyr Gln Val Leu Tyr Ala Ser Gly
 220 210 215 220
 222 Glu Arg Tyr Tyr Gln Glu Leu Gln Glu Ser Leu Lys Leu Ser Glu Lys
 223 225 230 235 240
 225 Lys Leu Thr Asn Ile Ser Val Gln Pro Tyr Ile Asp Lys Met Val Glu
 226 245 250 255
 228 Val Met Ala Asn Thr Asp Leu Met Val Gly Arg Ala Gly Ala Thr Ser
 229 260 265 270
 231 Ile Ala Glu Phe Thr Ala Leu Gly Leu Pro Ala Ile Leu Ile Pro Ser
 232 275 280 285
 234 Pro Tyr Val Thr Asn Asp His Gln Thr Lys Asn Ala Gln Ser Leu Val
 235 290 295 300
 237 Lys Val Gly Ala Val Glu Met Ile Pro Asp Ala Glu Leu Thr Gly Ala
 238 305 310 315 320
 240 Arg Leu Val Ala Ala Ile Asp Asp Ile Leu Leu Asn Asn Glu Lys Arg
 241 325 330 335
 243 Gln Gln Met Ala Thr Ala Ser Lys Gly Glu Arg Ile Pro Asp Ala Ser
 244 340 345 350
 246 Asp Arg Leu Tyr Gln Trp Lys Thr Leu Val
 247 355 360
 250 <210> SEQ ID NO: 4
 251 <211> LENGTH: 360
 252 <212> TYPE: PRT
 253 <213> ORGANISM: Enterococcus hirae
 255 <400> SEQUENCE: 4
 256 Met Lys Ile Leu Val Thr Gly Gly Gly Thr Gly Gly His Ile Tyr Pro
 257 1 5 10 15
 259 Ala Leu Ala Phe Val Asn Tyr Val Lys Thr Lys Glu Pro Asn Thr Glu
 260 20 25 30
 262 Phe Met Tyr Val Gly Ala Gln Arg Gly Leu Glu Asn Lys Ile Val Pro
 263 35 40 45
 265 Glu Thr Gly Met Pro Phe Arg Thr Leu Glu Ile Gln Gly Phe Gln Arg
 266 50 55 60
 268 Lys Leu Ser Leu His Asn Leu Lys Thr Ile Gln Leu Phe Leu Lys Ser
 269 65 70 75 80
 271 Ile Arg Glu Ala Lys Lys Ile Leu Lys Glu Phe Lys Pro Asp Val Val
 272 85 90 95
 274 Ile Gly Thr Gly Gly Tyr Val Ser Gly Ala Val Val Tyr Ala Ala Ser
 275 100 105 110
 277 Lys Leu Ala Ile Pro Thr Ile Ile His Glu Gln Asn Ser Val Pro Gly
 278 115 120 125
 280 Ile Thr Asn Lys Phe Leu Ser Arg Tyr Val Asp Arg Ile Ala Leu Ser
 281 130 135 140
 283 Phe Glu Asp Ala Ala Pro Phe Phe Pro Ala Glu Lys Ser Ser Leu Ile
 284 145 150 155 160
 286 Gly Asn Pro Arg Ala Gln Glu Val Ala Asp Met Asp Lys Ser Lys Ile
 287 165 170 175

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/829,275

DATE: 10/01/2001
TIME: 15:17:24

Input Set : A:\4555105.app
Output Set: N:\CRF3\10012001\I829275.raw

```

289 Leu Ala Thr Tyr Gly Leu Asp Pro Glu Lys Lys Thr Val Leu Ile Phe
290      180          185          190
292 Gly Gly Ser Gln Gly Ala Leu Lys Ile Asn Gln Ala Val Thr Glu Phe
293      195          200          205
295 Leu Met Ser Phe Asp Gln Glu Tyr Gln Val Leu Tyr Ala Ser Gly Glu
296      210          215          220
298 Arg Tyr Tyr Lys Asp Ile Gln Thr Lys Val Pro Ala Cys Ala Asn Val
299 225      230          235          240
301 Ser Ile Gln Pro Tyr Ile Asn Lys Met Ala Glu Val Met Ala Ser Ser
302      245          250          255
304 Asp Leu Leu Val Gly Arg Ala Gly Ala Thr Ser Ile Ala Glu Leu Thr
305      260          265          270
307 Ala Leu Gly Leu Pro Ala Ile Leu Ile Pro Ser Pro Tyr Val Thr Asn
308      275          280          285
310 Asp His Gln Thr Lys Asn Ala Met Ser Leu Val Lys Asn Asn Ala Ala
311      290          295          300
313 Lys Met Ile Lys Asp Asp Glu Leu Asp Gly Arg Ser Leu Lys Gln Ala
314 305      310          315          320
316 Ile Glu Glu Ile Met Thr Asn Asp Gln Leu Gln Lys Gln Met Ser Leu
317      325          330          335
319 Ala Ser Lys Gln Gln Gly Ile Pro Asp Ala Ser Glu Arg Met Tyr Glu
320      340          345          350
322 Leu Val Lys Ser Leu Ile Gln Lys
323      355          360
326 <210> SEQ ID NO: 5
327 <211> LENGTH: 352
328 <212> TYPE: PRT
329 <213> ORGANISM: Streptococcus pneumoniae
331 <400> SEQUENCE: 5
332 Met Lys Ile Val Phe Thr Gly Gly Thr Val Gly His Val Thr
333   1          5          10          15
335 Leu Asn Leu Leu Met Pro Lys Phe Ile Glu Asp Gly Trp Glu Val
336   20         25          30
338 His Tyr Ile Gly Asp Lys Arg Gly Ile Glu His Gln Glu Ile Leu Lys
339   35         40          45
341 Ser Gly Leu Asp Val Thr Phe His Ser Ile Ala Thr Gly Lys Leu Arg
342   50         55          60
344 Arg Tyr Phe Ser Trp Gln Asn Met Leu Asp Val Phe Lys Val Cys Trp
345   65         70          75          80
347 Gly Ile Val Gln Ser Leu Phe Ile Met Leu Arg Leu Arg Pro Gln Thr
348   85         90          95
350 Leu Phe Ser Lys Gly Gly Phe Val Ser Val Pro Pro Val Ile Ala Ala
351   100        105         110
353 Arg Val Ser Gly Val Pro Val Phe Ile His Glu Ser Asp Leu Ser Met
354   115        120         125
356 Gly Leu Ala Asn Lys Ile Ala Tyr Lys Phe Ala Thr Lys Met Tyr Ser
357   130        135         140
359 Thr Phe Glu Gln Ala Ser Ser Leu Ser Lys Val Glu His Val Gly Ala
360 145      150          155          160

```

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/829,275

DATE: 10/01/2001
TIME: 15:17:25

Input Set : A:\4555105.app
Output Set: N:\CRF3\10012001\I829275.raw

L:19 M:271 C: Current Filing Date differs, Replaced Current Filing Date